US005317688A

United States Patent [19]

Watson et al.

[11] Patent Number: 5,317,688

[45] Date of Patent: May 31, 1994

[54] **SOFTWARE AGENT USED TO PROVIDE INSTRUCTION TO A USER FOR A PLURALITY OF COMPUTER APPLICATIONS**

[75] Inventors: **Ralph T. Watson**, San Jose; **Barbara B. Packard**, Los Altos Hills; **Glenn Stearns**, Scotts Valley, all of Calif.

[73] Assignee: **Hewlett-Packard Company**, Palo Alto, Calif.

[21] Appl. No.: **23,758**

[22] Filed: **Feb. 26, 1993**

Related U.S. Application Data

[63] Continuation of Ser. No. 674,439, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 225,115, Jul. 26, 1988, abandoned.

[51] **Int. Cl.**[5] **G06F 15/64**

[52] **U.S. Cl.** **395/161**; 395/155

[58] **Field of Search** ... 364/200 MS File, 900 MS File; 340/706; 395/155, 156, 161

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,190,835	2/1980	Buynak	340/750
4,558,413	12/1985	Schmidt et al.	364/300
4,742,467	5/1988	Messerich et al.	364/200
4,809,170	2/1989	Leblang et al.	364/200
4,811,240	3/1989	Ballou et al.	364/518
4,866,638	9/1989	Cosentino et al.	364/521
5,041,992	8/1991	Cunningham et al.	364/518

FOREIGN PATENT DOCUMENTS

0236744 9/1987 European Pat. Off. .

OTHER PUBLICATIONS

J. L. Bennett, "Tools for Building Advanced User Interfaces", IBM Systems Journal, vol. 25, No. 3-4, part 1, 1986, pp. 354-368.

R. Edmonds et al.: "The Synics2 User Interfade Manager", Interact '84/B S. Shackel (Ed)-Human Computer Interaction, 1985, pp. 375-378.

G. R. Gallaway et al.: "Embedded Training in Computer Based Information Systems Software", IEEE 1986 National Aerospace and Electronics Conference NAECON 1986, Dayton, May 19-23, 1986, vol. 3, pp. 846-850.

W. Buxton et al. "Towards a Comprehensive User Interface Management System", Computer Graphics, vol. 17, No. 3, 1983, pp. 35-42.

Primary Examiner—Phu K. Nguyen

[57] **ABSTRACT**

A computing system includes an application object, a computer based training instruction object ("INSTRUCTION object") and an agent engine. The INSTRUCTION object runs concurrently with the application object. The application objects includes a first action processor and a first command processor. The first action processor receives messages which indicate syntactic actions taken by the user and generates semantic commands based on the syntactic actions. The first command processor receives the semantic commands from the first action processor and executes the semantic commands. The INSTRUCTION object receives input from a user through syntactic actions and displays information on a monitor. The information instructs a user as to operation of the first application. The INSTRUCTION object may include an INSTRUCTION action processor and an INSTRUCTION command processor. The INSTRUCTION action processor receives messages which indicate syntactic actions taken by the user and generates semantic commands based on the syntactic actions. The INSTRUCTION command processor receives the semantic commands from the INSTRUCTION action processor and executes the semantic commands. The agent, running a task language program, sends semantic commands to the INSTRUCTION object which direct the INSTRUCTION object as to what information to display. The agent also monitors the application object and the INSTRUCTION object, intercepting semantic commands before they are executed.

10 Claims, 18 Drawing Sheets